



## SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Sathy Main Road, SNS Kalvi Nagar,  
Saravanampatti Post, Coimbatore - 641 035,  
Tamil Nadu.



### CONGESTIVE HEART FAILURE

#### DEFINITION

- It is a chronic condition in which the heart fails to pump blood normally as it should.
- Unable to pump the blood to maintain blood flow to the body needs.
- Heart failure is caused by any condition which reduces the efficiency of the heart muscle through damage or overload.

#### SYMPTOMS

- Shortness of breath
- Pleural effusion
- Feeling tired
- Swelling in abdomen
- Swelling in ankles and legs

#### EPIDEMIOLOGY

- About 40 billion people are affected by this disease world wide.
- Only 2% of adults are affected and other 98% of the people are above the age of 65.

#### ETIOLOGY

Left sided heart failure

- Systolic heart failure
- Diastolic heart failure

Right sided heart failure

- Right ventricular failure

High output failure

#### COMMON TERMS

##### Preload

Amount of blood in the ventricular cavity at the end of diastole.

##### Afterload

- Resistance of left ventricle to circulate blood
- Increase in afterload increase cardiac workload

##### Ejection fraction

- Ejection of blood from ventricle per contraction is ejection fraction

#### SYSTOLIC HEART FAILURE

In this condition, ventricles are not able to contract properly.

Due to dysfunction of myocardium, it doesn't generate enough stroke volume, Cardiac output.

It may be due to,

- Increased preload
- Decreased contractility

Increased preload is because of:

Mitral valve regurgitation:

A backflow of blood caused by failure of the heart's mitral valve to close tightly.

Aortic regurgitation: The backflow of blood by aortic valves to ventricle.

Decreased contractility is due to:

- Myocardial infarction
- Cardiomyopathy i.e., myocardium becomes

flappy

- Decreased contractility
- Decreased stroke volume
- Decreased Cardiac output

### **DIASTOLIC HEART FAILURE**

In this condition, ventricles not able to fill the

blood properly. This is because of improper stretching, heart becomes stiff. This causes decreased filling of ventricles. It may be due to,

- Decreased preload
- Increased afterload

Decreased preload is because of:

- Myocardial infarction
- Restrictive cardiomyopathy
- Pericarditis

Increased afterload is because of:

- Aortic stenosis
- Coarctation of aorta

Aortic stenosis: Narrowing of the valve in the large blood vessel branching off the heart (aorta).

Coarctation of aorta: A narrowing of the large blood vessel (aorta) that leads from the heart.

### **RIGHT VENTRICULAR FAILURE**

It is common due to left ventricular failure. It may be due to,

- Increased afterload
- Increased preload
- Decreased contractility

Increased afterload is because of:

- Pulmonary stenosis
- Pulmonary Hypertension
- Pulmonary embolism
- Cor pulmonale

Pulmonary stenosis: Obstruction of blood flow from the right ventricle to the pulmonary artery.

**Pulmonary Hypertension:** A type of high blood pressure that affects arteries in the lungs and in the heart.

**Pulmonary embolism:** A condition in which one or more arteries in the lungs become blocked by a blood clot.

**Cor pulmonale:** Cor pulmonale is defined as an alteration in the structure and function of the right ventricle (RV) of the heart caused by a primary disorder of the respiratory system.

Increased preload is because of:

**Pulmonary regurgitation:** Pulmonary regurgitation occurs when the pulmonary valve doesn't completely close and allows some blood to leak back into the heart

**Tricuspid regurgitation:** Tricuspid regurgitation is a disorder in which this valve does not close tight enough. This problem causes blood to flow backward into the right upper heart chamber (atrium) when the right lower heart chamber (ventricle) contracts.

Decreased contractility is because of:

- Myocarditis ( fibrotic tissue in right ventricular myocardium)
- Myocardial infarction

### **HIGH OUTPUT FAILURE**

It occurs with underlying CVS disease. It may be due to,

- Severe Anaemia that leads to hypoxia
- There is a oxygen demand to myocardial tissue

### **PATHOPHYSIOLOGY**

Main Pathophysiology of CHF is backward failure

- Pulmonary edema
- Dyspnea
- Dry cough
- Orthopnea
- Hypoxemia
- Crackle's during inspiration

**Jugular vein distention:** Bulging of jugular vein due to increased pressure of blood in jugular vein.

- Hepatomegaly
- Splenomegaly
- Ascites
- Pitting edema

### **DIAGNOSIS**

- Echocardiogram
- Electrocardiogram
- Chest x-ray

### **MANAGEMENT**

## **Pharmacological Treatment**

Anti- failure drugs such as:

- Digitoxin
- Digoxin
- ACE inhibitors
- Angiotensin receptor blockers
- Diuretics: Spironolactone, Eplerenone.